

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

- (a) the nucleotide sequence set forth in SEQ ID NO: 2;
- (b) a nucleotide sequence encoding the polypeptide set forth in SEQ ID NO: 1;
- (c) a nucleotide sequence which hybridizes to the complement of (a) or (b) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one wash step, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one wash step, and wherein the encoded polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;
- (d) a nucleotide sequence complementary to any of (a), (b), or (c).~~(a)-~~
~~(c)-~~

2. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

- (a) a nucleotide sequence encoding a polypeptide that is at least about ~~75, 80, 85,~~ 90, 95, 96, 97, 98, or 99 percent identical to a mature form of the polypeptide set forth in SEQ ID NO: 1, wherein the polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;
- (b) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence set forth in SEQ ID NO: 2, wherein an the encoded mature form of the polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;
- ~~(c) — a nucleotide sequence of SEQ ID NO: 2, (a), or (b) encoding a polypeptide fragment of at least about 25 amino acid residues, wherein the polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;~~
- ~~(d) — a nucleotide sequence comprising a fragment of at least about 16 nucleotides of SEQ ID NO: 2, or of (a) (c);~~

~~(c)~~ (e) a nucleotide sequence which hybridizes to the complement of any of (a)-(d) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one wash step, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one wash step, and wherein the encoded polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

~~(d)~~ (f) a nucleotide sequence complementary to any of (a)-(c).

3. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one conservative amino acid substitution, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(b) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid insertion, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(c) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid deletion, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and, when heterodimerized to human $\alpha 2$ polypeptide, has is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(d) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 which has a C- and/or N- terminal truncation, wherein the polypeptide is at least about 90% identical to SEQ ID NO: 3 and, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(e) a nucleotide sequence encoding a mature form of the polypeptide as set forth in SEQ ID NO: 1 with at least one modification selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, wherein the polypeptide is at least about

90% identical to SEQ ID NO: 3 and, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

~~(f) a nucleotide sequence comprising a fragment of at least about 16 nucleotides of (a), (b), (c), (d), or (e), wherein the encoded polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;~~

(g) a nucleotide sequence which hybridizes to the complement of any of (a)-(e)(f) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, followed by at least one wash step, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, followed by at least one wash step, and wherein the encoded polypeptide, when heterodimerized to human $\alpha 2$ polypeptide, is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

(g) (h) a nucleotide sequence complementary to any of (a)-(f)(e).

4. (Original) A vector comprising the nucleic acid molecule of Claims 1, 2, or 3.
5. (Original) A host cell comprising the vector of Claim 4.
6. (Original) The host cell of Claim 5 that is a eukaryotic cell.
7. (Original) The host cell of Claim 5 that is a prokaryotic cell.
8. (Previously Presented) A process of producing a polypeptide encoded by the nucleic acid molecule of Claims 1, 2, or 3 comprising culturing the host cell of Claim 5 under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.
9. (Canceled)
10. (Currently Amended) The process of Claim 8, wherein the nucleic acid molecule comprises promoter DNA other than the native promoter DNA for the $\beta 10$ polypeptide operatively linked to the DNA encoding the $\beta 10$ polypeptide.

11. (Original) The isolated nucleic acid molecule according to Claim 2 wherein the percent identity is determined using a computer program selected from the group consisting of GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.

Claims 12 - 46. (Canceled)

47. (Original) A composition comprising a nucleic acid molecule of Claims 1, 2, or 3 and a pharmaceutically acceptable formulation agent.

48. (Original) A composition of Claim 47 wherein said nucleic acid molecule is contained in a viral vector.

49. (Original) A viral vector comprising a nucleic acid molecule of Claims 1, 2, or 3.

50. (Previously Presented) A fusion polypeptide comprising a polypeptide encoded by a nucleic acid molecule of Claims 1, 2, or 3 fused to a heterologous amino acid sequence.

51. (Original) The fusion polypeptide of Claim 50 wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

Claims 52 - 60. (Canceled)

61. (Previously Presented) A vector comprising at least one nucleic acid molecule according to Claim 1, 2, or 3, and at least one nucleic acid molecule encoding human $\alpha 2$ polypeptide.

Claims 62 - 64. (Canceled)

65. (Currently Amended) A process of producing an $\alpha 2/\beta 10$ heterodimer comprising culturing the host cell of Claim 62 5 under suitable conditions to express the $\alpha 2/\beta 10$ heterodimer, and optionally isolating the $\alpha 2/\beta 10$ heterodimer from the culture.

Claims 66 - 99. (Canceled)